D. H. MOORE

# THE R.C.A. CATACOMB

A

Practical Treatise

The Editorial Group, Ltd...

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DEDICATION

...to a way of life -
that should not have
been forgotten.

## Autographed Edition

It is my sincerest wish that this latest contribution of my vintage radio writings may afford you as much enjoyment and usefulness as I've had in compiling it.

Over to you, and 73,

Palo Alto

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# THE RCA CATACOMBS

The peculiarly potted caracombs of R.C.A. in the mid-Twenties have long presented a problem for the serious hobbyist or restorer, in as much as our much-vaunted references such as Riders and Sams and Beitmann contain no information of moment. Even the Volume I of the early RCA Service Manual is incomplete, and leaves much to be desired. Another aspect of the problem has been that there were six-tube and eight-tube versions which were not standardised.

This treatise came into being because of the rather large number of requests received from time to time anent such information as is contained herein. Actually, compilation of these data grew out of my own frustration in seeking pertinent data in our sacred-cow references. I melted down a couple of the catacombs and made a few sketches and found that the catacombs can be repaired, restored, or simply checked-out. However, as a caution, I would not recommend that you boil out any catacomb unless you are really adept at winding coils with Litz wire, and your wife doesn't object to the smell of melted beeswax and asphaltum permeating her house.

Such labour on my part allowed me to trace-out the wiring but determining values for capacitors was impossible. By cut-and-try I found that the values were quite convention for the time - that is, .00025 and .006 being the general values used by RCA. Several manufactures other than the Octupus employed potted catacombs, such as Haynes, Raven, Harkness, McMurdo Silver, Rasco, Premier, and such. Some of the "orphan" catacombs were potted in Bakelite rather than tin, and they are, obviously, much more fragile to work with. Bakelite formulae did change over the years, and the earlier Bakelite catacombs will melt or distort under heat. The latter-day catacombs, such as that used by Raven or Baldwin are much sturdier.

RCA used catacombs in the following models:

| | |
|---|---|
| Radiola 24 | Victor 7-2 (Alhambra) |
| Radiola 25 | Victor 9-1 (Florenza) |
| Radiola 26 | Victor 9-2 |
| Radiola 28 | Victor 9-3 & 9-15-1 |
| Radiola 30 & 30-A | Victor 9-25 |
| Radiola 31 | Victor 9-40 |
| Radiola 32 | Victor 9-55 |
| Super-Heterodyne | Super VIII |

While the design concept of the catacombs was identical, they were not interchangeable between some models, which has added to the confusion of the modern hobbyist, not to mention our early radio servicemen. This has led to many a catacomb being ruined.

The following data are offered as a guide for the bedeviled among us. These data will permit you to determine what model catacomb you have, how to test it, how to connect wires to the proper terminals, test voltages at the terminals, and also to determine whether your catacomb was designed for the DC or AC versions of a given circuit.

Several of the RCA battery-operated sets listed above were also adaptable to a power supply operated from the mains, without altering the function of the catacombs. You will find pertinent data anent such sets in the following pages.

The test equipment suggested are simple devices which you should have no trouble in putting together. While the RAdiola 25 and 28 catacombs are demonstrated, the techniques and procedures are quite adaptable to any other manufacturer's catacomb - and a simple continuity check such as is outlined herein will allow you to make-up your own continuity circuit for applying the test procedures. With the RCA catacombs, their orientation was always the same, which helps sometime in numbering terminal strip or catacomb connexions which have disappeared over the years.

You will also find several factory changes made by RCA in a couple of their sets, particularly the AC jobbies, and such changes will also permit you to know the approximate age of your set, as the changes detailed are obvious as soon as you spot them. As always, your comments, questions, or suggestions will be welcomed, and I would like to feel that this degage treatise is of meaningful help to you.

* * *

Aside from the rather flippant reason given for not boiling-out a catacomb, there are other and practical reasons:

1. Trouble usually occurred in the catacombs from opens and corrosion. You will find it rather tedious trying to "zap" an open winding with, say, a Variac, and if you succeed, the repair will not last very long. Sintered wire of early manufacture does not have the same malable characteristics as wire of modern manufacture.

2. If you take a coil or transformer from a catacomb and open it up, you are likely to find deep inside the layers of wire spots of verdigris that will surpise you by their magnitude. A transformer or coil with such corrosion cannot be repaired, of course. Layers of wire

were, in those days, usually seperated by cambric cloth or treated wax-paper - "fish-skin" had not yet been placed on the market. Such materials could have carried moisture or oil from the assembler's fingers into the windings and in time, acidify the protective covering.

3. It was usually the audio sexion of the catacombs that would first generate trouble. Unless you're a purist in these matters, there is no law against removing the AF transformers and replacing them with a superior configuration - a resistance-coupled audio sexion. The early Daven "Resisto-Couplers" are ideal for this purpose, and they produce superior tonal quality.

The "Resisto-Coupler" units were not the three-tubed audio amplifiers brought out by Daven a couple of years after they released their "Radio Type 3C Amplifier Kit". The kit contained seperate resistance units, two resistors per unit, with a .006 MFD condenser imbedded underneath the supporting base for the resistors. You can also make-up your own, as there is nothing exotic about such units, and the usual values obtained (see the Resistance-Coupled Audio Amplifiers treatise included with the Master Index of the Sketch-Books).

The covers of the catacombs, such as those of RCA, were all rivetted; other manufactuers sometimes simply prest a piece of cardboard over the potting material while it was still warm. The rivets can easily be drilled out, and the cover replaced with small machine-screws and nuts. It is also advisable to re-solder each and every joint you find, both inside and outside a catacomb, as Q.A. was a bit indifferent in earlier times. It is also advisable to replace as much of the original wiring as is feasible, as earlier wire, especially the stranded type, also had a habit of developing internal verdigris.

* * *

I am endebted to Paul J. Bourbon of San Francisco for these data:

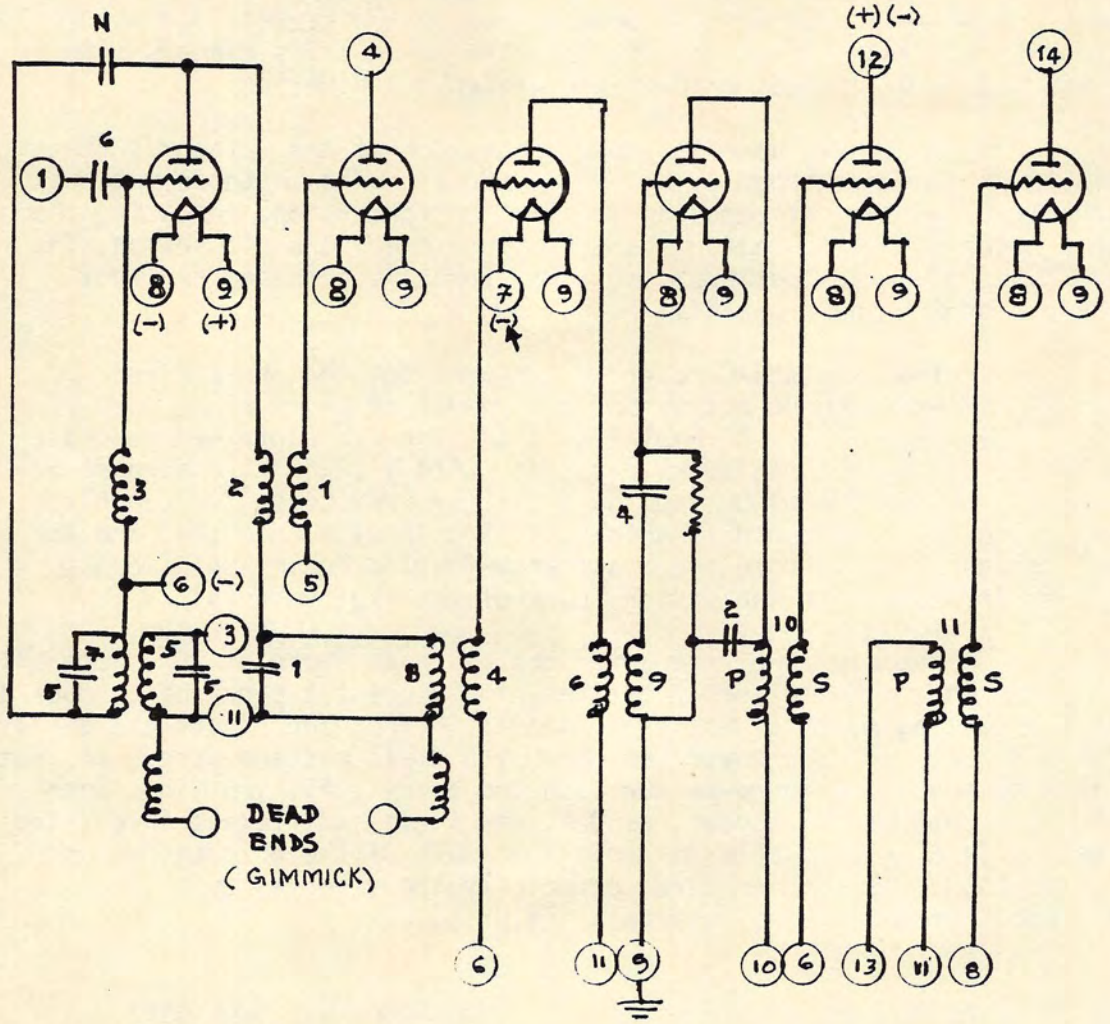
Checking Inductances:

| | | |
|---|---|---|
| Pin 6 & Grid of 1st Tube | 58 | milliHenries |
| " 3 & Pin 11 | 15.6 | " |
| " 11 & PL of 1st Tube | 16 | " |
| " 5 & Grid of 2nd Tube | 3.2 | " |
| " 6 & " " 3rd " | 600 | " |
| " 11 & PL of 3rd Tube | 132 | " |
| " 10 & " " 4th " | 40 | " |
| Pin 6 & Grid of Last Tube | 58 | MilliHenries |

* * *

All AF transformers 5:1 radtio. All grid-leaks = 2 to 3 megohms.

RCA CONTINUITY TEST CIRCUIT OF STANDARD 6 TUBE CATACOMB




○ = WHISKERS.

ALL NOS. REFER TO ADJACENT UNITS.

VOLTAGE READINGS TAKEN AT CATACOMB TERMINAL STRIP:

| Volts: | (+) Terminal | (-) Terminal |
|---|---|---|
| 4.5 A | 12 | 10 |
| 4.5 C | 20 | 7 |
| 135 | 17 | 12 |
| 90 | 14 | 12 |
| 45 | 13 | 12 |
| 22.5 | 20 | 6 |

## TESTING THE CATACOMBS

The following test procedures have been developed which, if studied and thought about, can be applied to any catacomb of the period in which they were popular. The Radiola 25 and Radiola 28 catacombs are used to demonstrate the test procedures and the application of the test equipment - the latter being simple and quickly made.

You will also need a handful of Test Sheets, which you can make up yourself, an example of which is appended. You will find that you can take the wiring diagram of any catacomb and dope out your own Test Sheet data. The Test Sheets showing tests on the Radiola 25 and 28 catacombs should be self-explanatory.

The only caution that might be mentioned at this point is in reference to the filament circuit of the tube sockets. The filament contacts were not always symetrical - that is, most set manufacturers of the period liked to line-up their tube sockets so that all A- and A+ contacts had the same orientation. In the catacombs such orientation is more asymetrical, due chiefly to the constraints of space, on the one hand, and ease of wiring, on the other.

Where conventional orientation placed one A- contact opposite the A+ contact of the next tube, in the catacombs you are more likely to find A+ opposite A+ of the following tube. Unless this orientation is checked out by means of a continuity test from the filament contacts to binding posts on the terminal strip, you could misapply current with unhappy results. The two Radiola catacombs I have selected will demonstrate this point, I feel.

The early experience of servicemen with catacombs revealed that trouble in the catacombs was most likely to occur in the AF sexion, and the audio coils should always be checked first. If the trouble is there, you've saved yourself a lot of time and grief. On the schematics the AF coils are designated by an "X".

On the sketch of the Test-Box you will note a lead with an aligator-clip tied into a terminal marked "S". This is a special clip-probe that is used to test coils designated 9 amd 12 on the schematics. The use of the clip-probe is required in that the circuits end at terminals 6 and 13 on the terminal strip when the battery cable is released in order to remove the panel from the set under test.

Another test that can be made, although not listed on the Test Sheet, would include testing the volume control resistance unit, from 1-1 to 3-1; from A- contact in socket No. 1 to the A- connexion of the socket designated No. 3.

The following tests will give you a visible record of all catacomb tests, and with a little thought can be applied to catacombs of any manufacturer. Aside from the Test Sheets and Test Box, you will need an 874 tube, known as a glow-tube or a voltage-regulator during the Twenties, a 135VDC source, two 4-prong X99 tube bases, and some wire. The wire-cable connected to the tube bases may be shielded.

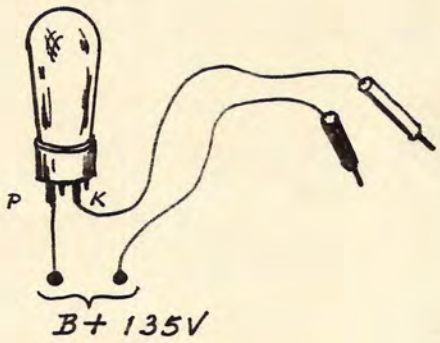
Data collected on your Test Sheets are, obviously, the most important part of any test you conduct. You should make-up as many Test Sheets as may be required, depending upon the number of tests you wish to run. You may use the blank form below, and simply have it Xeroxed.

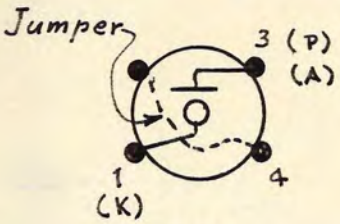
TEST SHEET No.____. CATACOMB _____

| BLACK BASE | RED BASE | CORRECT INDICATION | TROUBLE |
|---|---|---|---|
| Sckt. No. | Sw. Contact | | |
| | | | |

TEST SHEET No.____. CATACOMB _____

| BLACK SOCKET | | TESTING TERMINAL to Whisker No. | CORRECT INDICATION | TROUBLE |
|---|---|---|---|---|
| Sw. Contact No. | Socket No. | | | |
| | | | | |




874

Operating Voltage = 90V.
Starting Voltage = 125V.
Operating Current = 10-50mA

## VOLTAGE INDICATOR

You will find that this set-up is more sensitive as a voltage indicator than any voltmeter. While it will not tell you, obviously, the amount of voltage, it will indicate whether or not specific terminals are receiving voltage. The 874 will glow dimly, or not at all.

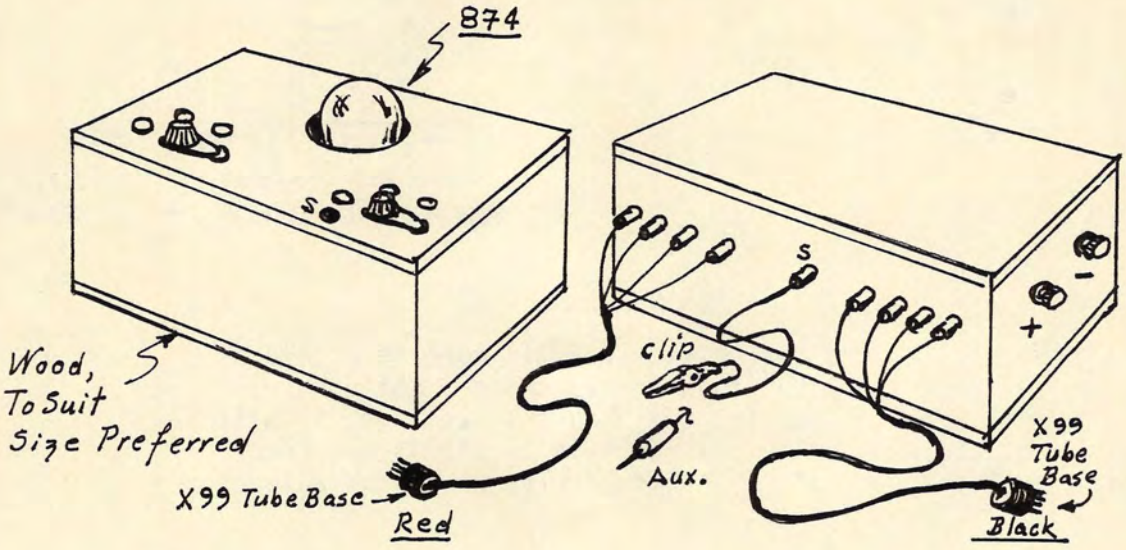
* * *

## CATACOMB BOILING NOTE

While it not advisable to boil-out a catacomb, you may be tempted to do so. If this happens, the following notes may be observed: the technique during the Twenties was to place the catacomb in the over of the new-fangled gas-ranges, place a suitable catch-basin under the catacomb, and wait. While you were waiting, you threw open all doors and windows. We've advanced a bit since then and the simplest way to boil-out a catacomb is to place it at a slight angle over suitable absorbent material. Place two infrared lamps at 45° about two feet from the catacomb, and then, after turning them on, wait a few minutes. Take a Smit-Victor heat-gun and slowly play the emission back and forth across the bottom of the catacomb. The components will begin to slide out after awhile. Remove them from the liquid gunk and continue with the heat-gun until the catacomb casing is as empty of gunk as may be expected. When you are finished, dispose of the material used to absorb the liquid gunk, and ventilate the room. If you perform the boil-out in an outdoor spot, say, on a patio, you have less of a problem of the smell permeating drapes and furniture.

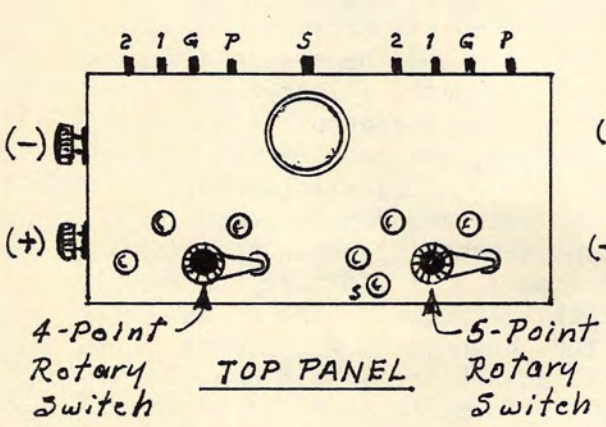
* * *

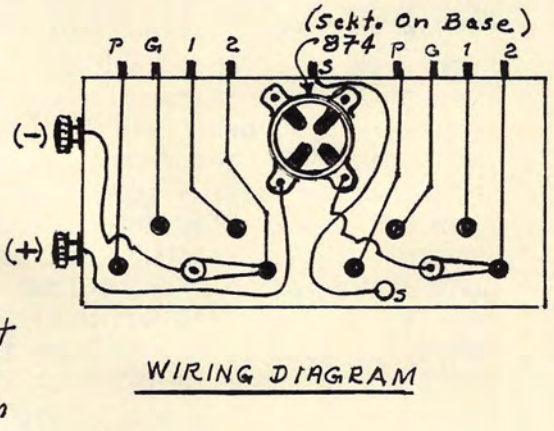
CATACOMB TEST-BOX




HOME-MADE TEST BOX

NOTE: The 874 glow-tube must be visible enough to where its bluish glow can be seen, as it is a check.



## RESISTANCES - RADIOLA 25 AC

Count Terminals from Right to Left When Facing Set.

| Resistance Terminals | Lower Limit | Normal Value | Upper Limit |
|---|---|---|---|
| 1-2 | 218.5 | 230 | 241.5 |
| 2-3 | 192 | 201 | 208 |
| 3-4 | Open | Open | Open |
| 4-5 | 151.9 | 155 | 158.1 |
| 5-6 | 143 | 150 | 153 |
| 6-7 | 44.75 | 50 | 55.25 |

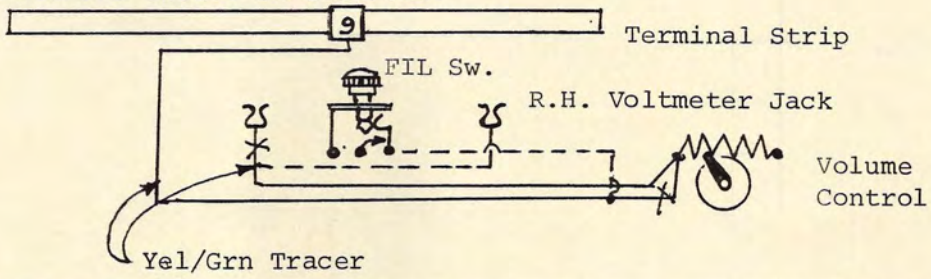
## VOLTAGE READINGS - RADIOLA 25

Count Catacomb Terminal Strip Terminals from Right to Left When Facing Set.

| Terminals | Correct Readings |
|---|---|
| 10 to 12 | Should read 31V with all tubes lighted and battery setting near "0". The positive (+) lead from the voltmeter should be plaved on Terminal 12. |
| 12 to 13 | Should read 21.5V. Posiive lead from voltmeter placed on Terminal 13. |
| 13 to 14 | Should read 4?V. Positive lead from voltmeter placed on Terminal 14. |

## FACTORY CHANGES IN AC PACKAGE UP-971

If your Radiola 25 has panel cabling instead of the regular black wire connections, and the AC UP-971 package has been installed, or you wish to install one yourself, the following instructions should be observed:




X = Delete

| TEST SHEET NO. 1 FOR RADIOLA NO. 25 CATACOMB | | | | | |
|---|---|---|---|---|---|
| BLACK BASE In Socket Number | Switch Contact Number | RED BASE In Socket Number | Switch Contact Number | CORRECT INDICATION | OTHERWISE TROUBLE AS INDICATED BELOW |
| 1 | G | 2 | G | Lights | Coil 4 or oscillator coil open |
| 1 | G | 3 | G | Lights | Coil 6 open |
| 1 | P | 3 | G | None | Condenser 7 shorted |
| 1 | P | 3 | P | Lights | Coils 2, 7 or oscillator coils open |
| 1 | 2 | 4 | P | None | Condenser 5 shorted |
| 1 | 2 | 4 | G | None | Grid condenser shorted |
| 1 | 2 | 5 | G | None | Condenser 2 shorted |
| X1 | G | 5 | G | Lights | Coil 10 open |
| 1 | 2 | 5 | P | None | Condenser 3 shorted |
| X1 | P | 5 | P | Lights | Coils 3, 5 or 11 open |
| 1 | 2 | 6 | G | None | Condenser 4 shorted |
| X6 | G to terminal six on back of terminal board using test connector No. 6 | | | Lights | Coil 12 open |
| X4 | P to terminal 13 on back of board as above | | | Lights | Coil 9 open |

| TABLE II—TEST SHEET FOR RADIOLA NO. 25 PANEL | | | | | |
|---|---|---|---|---|---|
| BLACK BASE In Socket Number | Switch Contact Number | RED BASE In Socket Number | Switch Contact Number | CORRECT INDICATION | OTHERWISE TROUBLE AS INDICATED BELOW |
| 1 | G | 2 | G | Lights | Coil 13 open |
| 1 | G | 2 | P | None | Condenser 5 shorted |
| X1 | P | 6 | P | Lights | Coil 1 or 7 open |
| 1 | P | 6 | 1 | None | Condenser 4 shorted |
| 1 | P | 6 | 2 | None | Condenser 3 shorted |
| 1 | 2 | 6 | G | None | Grid condenser shorted |
| X1 | 1 | 8 | G | Lights | Coil 10 open |
| NOTE: On this test terminals 20 and 22 on rear of terminal strip must be shorted. | | | | | |
| 2 | P | 3 | P | Lights | Coil 3 or 14 open |
| 2 | P | 4 | P | Lights | Coil 3 or 5 open |
| 2 | G | 4 | G | Lights | Coil 2 or 4 open |
| 2 | G | 5 | G | Lights | Coil 12 open |
| 2 | P | 5 | P | Lights | Coil 3 or 11 open |
| X2 | G | 7 | G | Lights | Coil 2 or 8 open |
| 2 | G | 7 | 1 | None | Condenser 2 shorted |
| X2 | P | 7 | P | Lights | Coil 3 or 9 open |
| 2 | P | 7 | 2 | None | Condenser 1 shorted |

TABLE III—RADIOLA 25 TESTING CATACOMB, AC EQUIPPED (OFF PANEL, BUT WITH RESISTANCE STRIP ON)

| BLACK SOCKET Switch Contact Number | Socket Number | Testing Terminal to Whisker Number | CORRECT INDICATION | OTHERWISE TROUBLE AS INDICATED BELOW |
|---|---|---|---|---|
| P | 1 | 13 | Lights | Coil 3 or 5 open |
| P | 1 | 7 | None | Condenser 7 shorted |
| G | 1 | 1 | None | Condenser 1 shorted |
| G | 1 | 7 | Lights | Half of coil 1 open |
| G | 2 | 5 | Lights | Coil 4 open |
| G | 3 | 10 | Lights | Coil 6 open (thru resistance strip) |
| P | X3 | 15 | Lights | Coil 7 or 11 open |
| P | 3 | 3 | Lights | Coil 7 or 2 open |
| P | 4 | 10 | None | Condenser 5 shorted |
| P | X4 | 12 | Lights | Coil 9 open |
| G | 4 | 10 | (Very faint, if any, light) | Grid condenser shorted |
| G | X5 | 9 | Lights | Coil 10 open |
| P | 5 | 9 | None | Condenser 3 shorted |
| G | X6 | 6 | Lights | Coil 12 open |
| G | 6 | 9 | None | Condenser 4 shorted |

X—indicates audio circuit

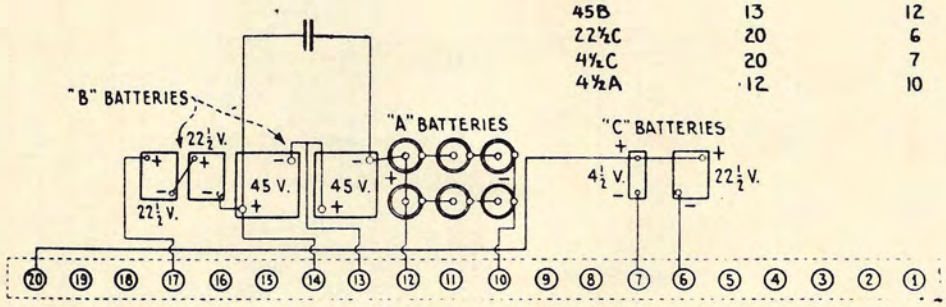
TABLE IV—RADIOLA NO. 28 CATACOMB, D.C. OPERATED

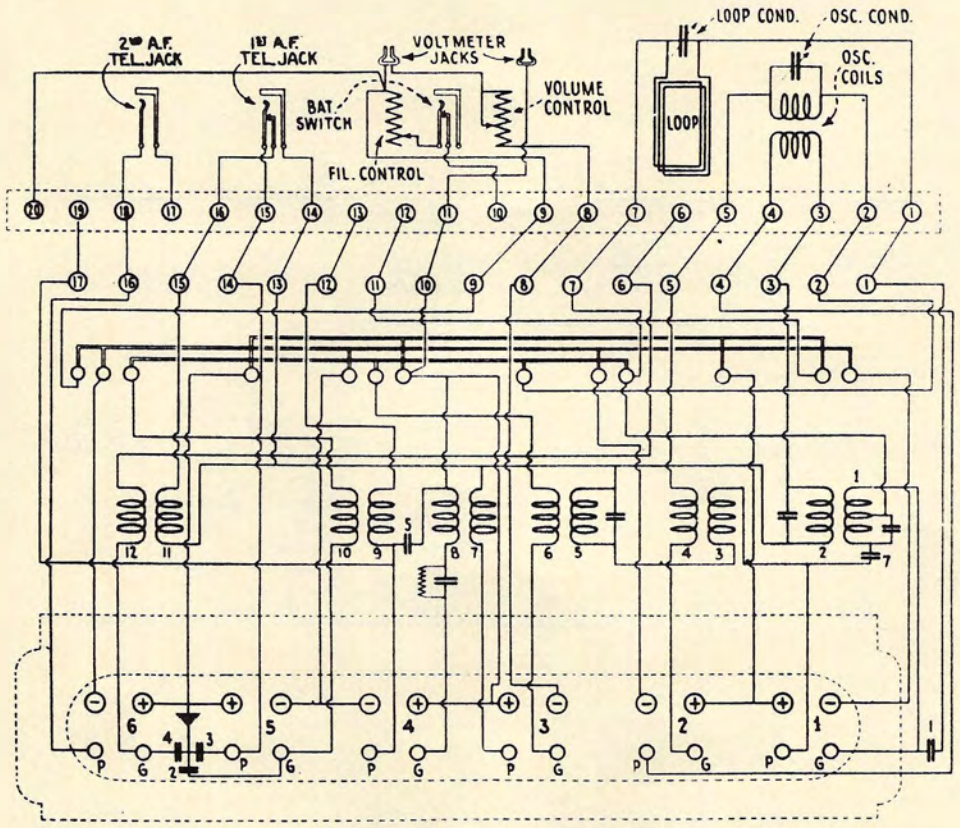
| BLACK SOCKET Switch Contact Number | Socket Number | Testing Terminal to Whisker Number | CORRECT INDICATION | TROUBLE |
|---|---|---|---|---|
| P | 1 | 9 | Light | Coil 1 open |
| P | 2 | 3 | None | Condenser 5 shorted |
| P | 2 | 10 | Lights | Coil 3 open |
| G | 2 | 3 | Lights | ½ of coil 2 open |
| G | 4 | 8 | Lights | Coil 4 open |
| P | 4 | 10 | Lights | Coil 5 open |
| P | 4 | 16 | Lights | Coil 5 or 9 open |
| P | 6 | 9 | Lights | Coil 7 open |
| G | 6 | 1 | None | Grid condenser shorted |
| 1 | 6 | 9 | None | Condenser 4 shorted |
| 2 | 6 | 9 | None | Condenser 3 shorted |
| 2 | 6 | 13 | None | Condenser 2 shorted |
| G | 7 | 8 | Lights | Coil 8 open |
| G | 8 | 18 | Lights | Coil 10 open |

# RADIOLA 25, VICTOR 7-2 & 9-1

VOLTAGE READINGS TAKEN AT CATACOMB TERMINAL STRIP

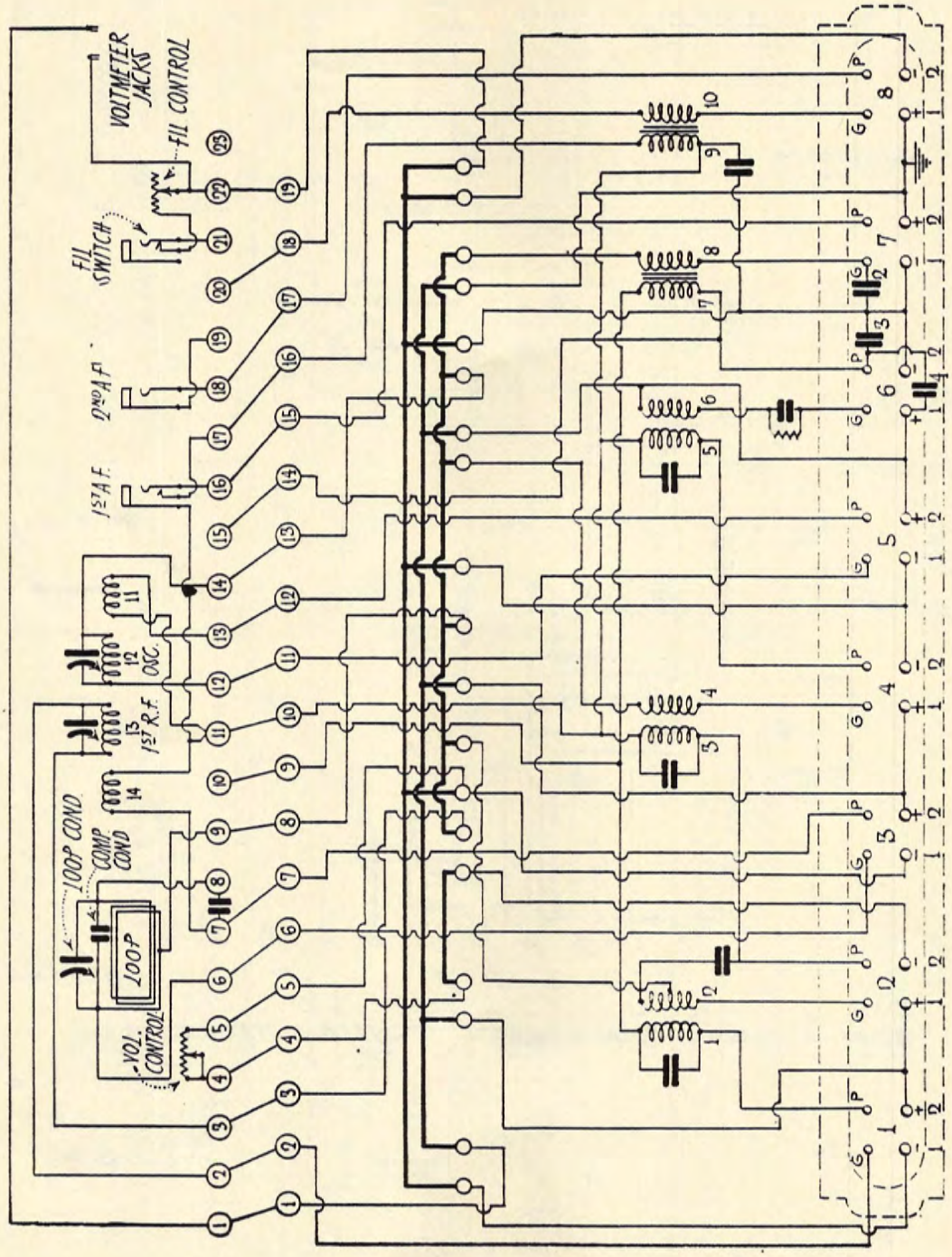
| VOLTS | + TERMINAL | - TERMINAL |
|---|---|---|
| 135B | 17 | 12 |
| 90B | 14 | 12 |
| 45B | 13 | 12 |
| 22½C | 20 | 6 |
| 4½C | 20 | 7 |
| 4½A | 12 | 10 |



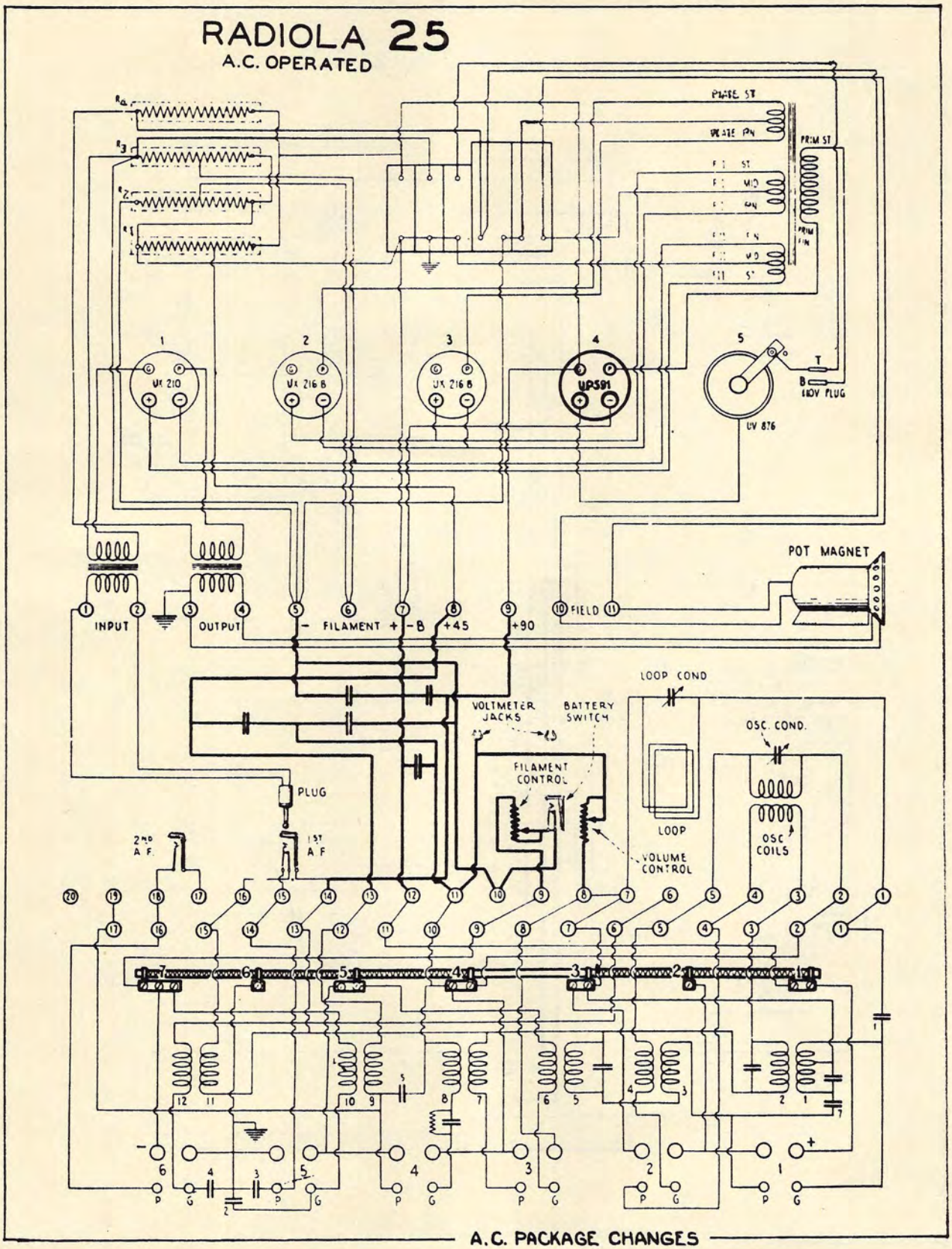


2nd A.F. TEL. JACK
1st A.F. TEL. JACK
VOLTMETER JACKS
BAT. SWITCH
FIL. CONTROL
VOLUME CONTROL
LOOP COND.
OSC. COND.
OSC. COILS
LOOP
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
12 11 10 9 8 7 6 5 4 3 2 1
6 4 3 5 4 3 2 1
P G P G P G P G P G P G

*Radiola 25 continuity diagram*

# RADIOLA 25




*Radiola 25 A.C. Operated Continuity Circuit Diagram. (Use spare terminal No. 6 in conjunction with Table III.)*




A.C. PACKAGE CHANGES

## NOTES ON AC OPERATION OF 25 & 28

The problems that arose from AC operation of the Radiolas 25 and 28 differed from those associated with battery models, due chiefly to the fact that they were driven by the RCA 104 speaker. The AC units used were the UP-971 for the Radiola 25, and the UP-972 for the 28.

Both units contained a special condenser block, a catacomb resistance strip, volume control, and battery setting resistances, along with connecting cables. In taking voltage readings on these units a tolerance of 5% was permissable.

Continuity tests should be run with the loop removed and the cable disconnected from the terminal strip at the rear of the catacomb. A pair of phones with at least 4.5V in series, or a voltmeter with voltage to give full-scale deflexion when connected directly across the battery terminals, should be used.

ANY FAILURE OF A CIRCUIT TO MEET THE VOLTAGE REQUIREMENTS OF ANY TEST WILL INDICATE A DEFECTIVE CATACOMB!

The following page depict what RCA called a "No-Current Volt-Meter". It was never produced commercially, but the information was distributed to RCA's dealers. It is an easily constructed unit, and it obviously facilitates checking the sets.

The battery posts shown are for an external battery with a voltage in excess of that to be measured. When an external voltage is applied so as to oppose the voltage of the circuit being measured, the galvanometer will read Zero when the two voltages are the same.

The following procedures should be used when measuring any DC voltage:

1. If UC-plug is not to be used, disconnect it and the 50-ohm resistor from the circuit.
2. Adjust pot. so that voltmeter reads approximate voltage to be measured.
3. Connect external voltage source to BATTERY posts.
4. Connect voltage to be measured to Flexible Leads posts.
5. Set Reversing Switch for current polarity - determined by experiment.
6. With Protective Push-Button open, adjust pot. by a Zero reading of the galvanometer.
7. Close the Protective Push-Button and re-adjust pot. for Zero reading.

8. Voltage indicated on the voltmeter is the correct voltage for the circuit under test.

NOTE: When measuring the FIL voltage of the AC-operated catacombs, the UX-plug with the 50-ohm resistor must be used.

CHECKING THE AC & RPA UNITS:

No Voltage Reading @ Terminal Strip:

1. Defective AC or RPA unit. Check the terminal board of the RPA to isolate trouble to the condenser block or cable.
2. If condenser block tests okay, check the RPA unit for the following conditions, with set turned on:

No Voltage @ RPA Unit:

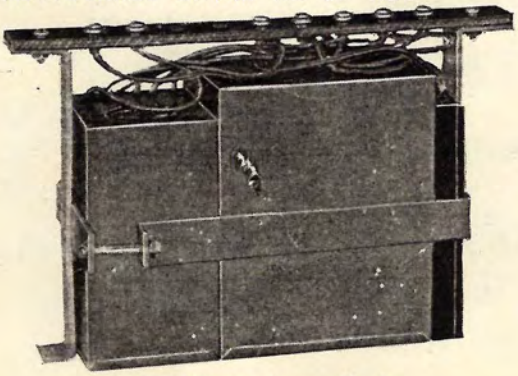
a) Shorted resistor UP-59].
b) Open Connexions @ RPA terminal board.
c) Shorted 7MF filter condenser, indicated by excessively hot plates of the 16-B tube.
d) Shorted 2MF condenser.

Low Voltage @ RPA Unit:

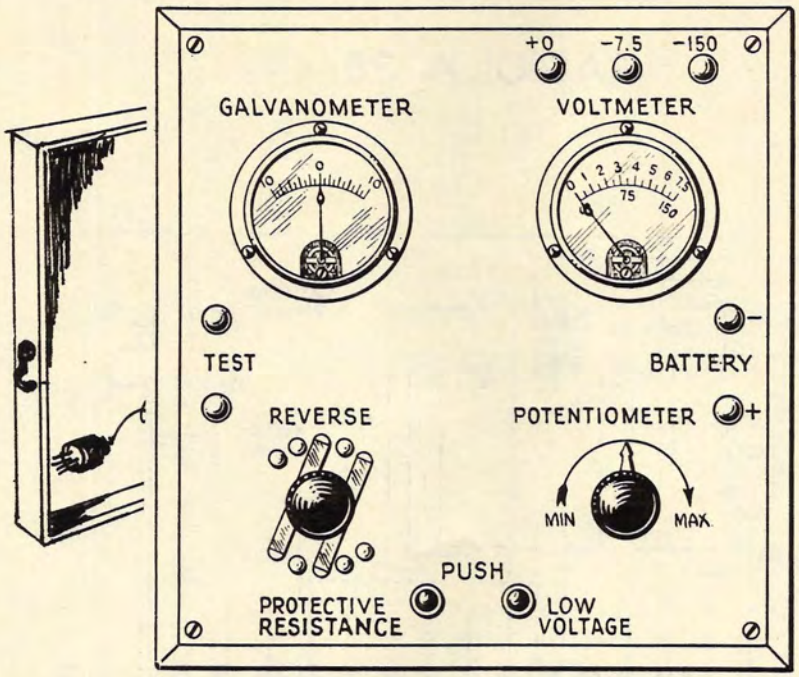
a) Power transformer winding shorted.
b) Low emission from the 16-B tube.
c) Leaky 7MF condenser or the 4MF condenser.
d) Leaky 2MF condenser next to resistance strip.
e) Defective resistance units.

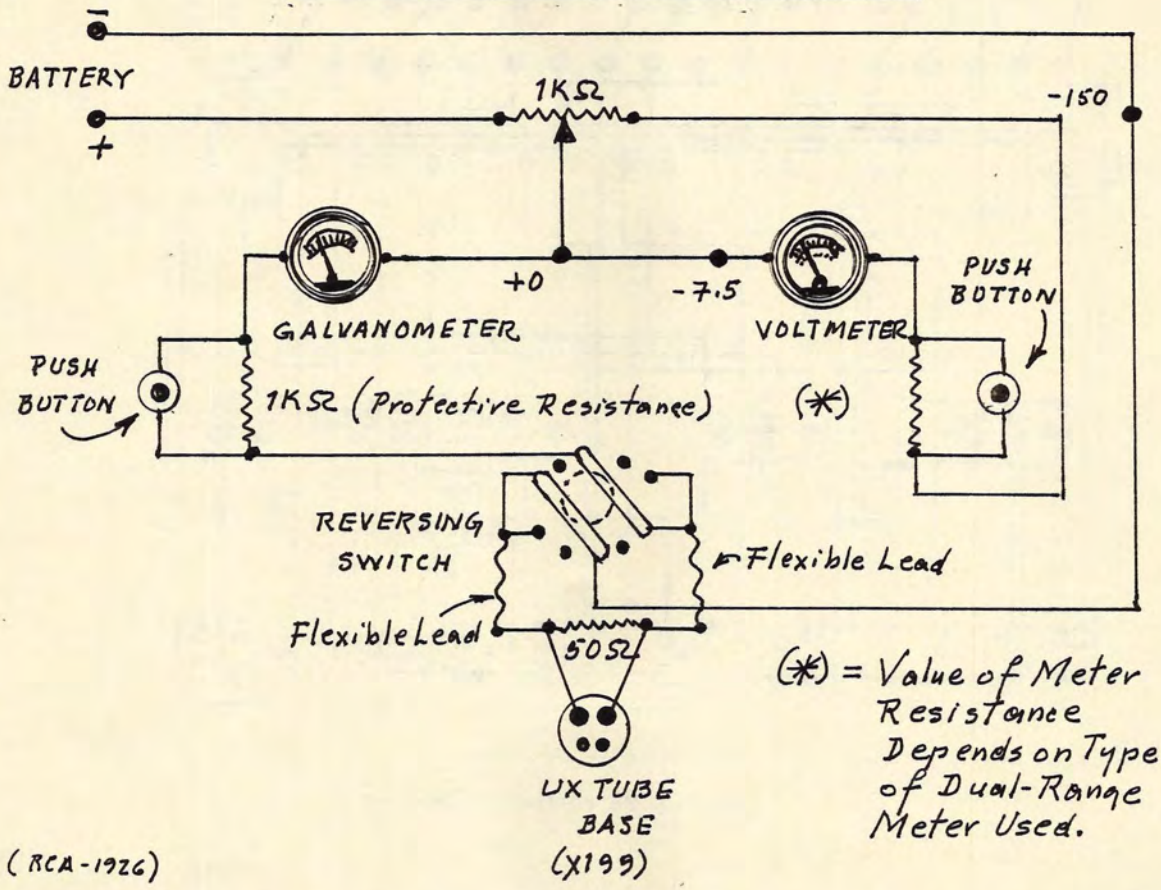
High Voltage in the RPA Unit:

a) Defective pot. magnet.
b) Defective resistance unit.
c) Shorted turns in the PRI of the power transformer.
d) Open resistance units R2 or R3.

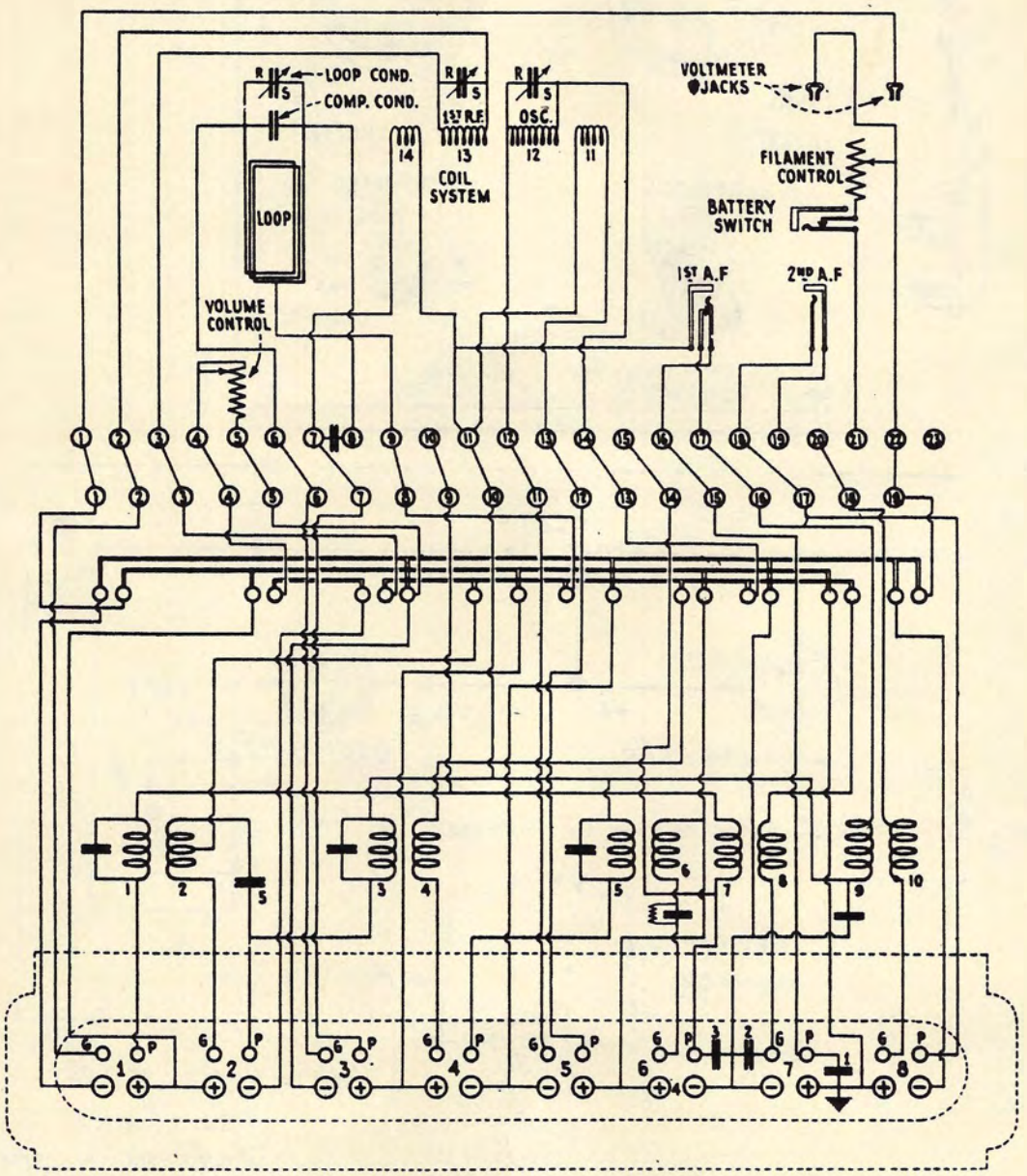


UP-972 Condenser Bank


+0
-7.5
-150
GALVANOMETER
VOLTMETER
TEST
BATTERY
REVERSE
POTENTIOMETER
MIN
MAX
PUSH
PROTECTIVE RESISTANCE
LOW VOLTAGE

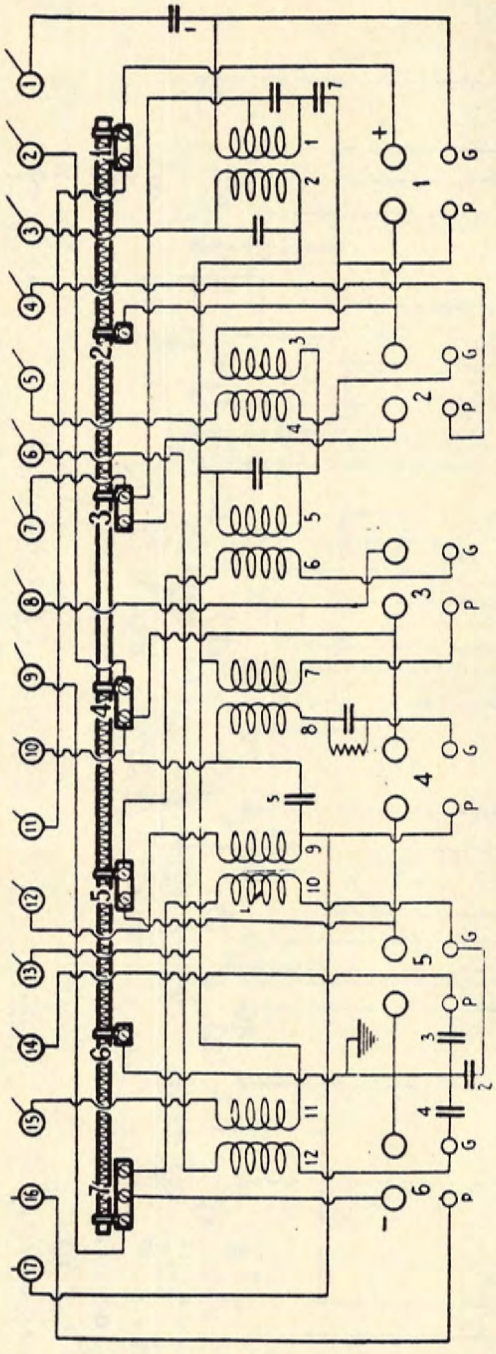

BATTERY
1KΩ
-150
+0
-7.5
GALVANOMETER
VOLTMETER
PUSH BUTTON
PUSH BUTTON
1KΩ (Protective Resistance)
(*)
REVERSING SWITCH
Flexible Lead
Flexible Lead
50Ω
UX TUBE BASE
(X199)
(*) = Value of Meter Resistance Depends on Type of Dual-Range Meter Used.
(RCA-1926)

# RADIOLA 28

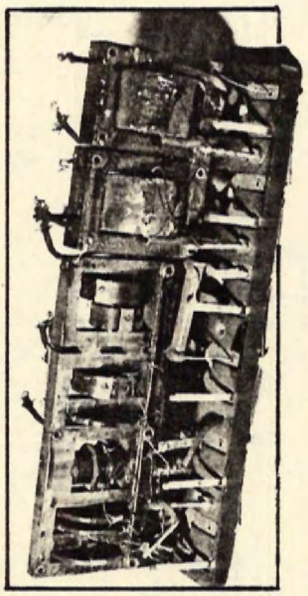



*Radiola 28 continuity diagram*

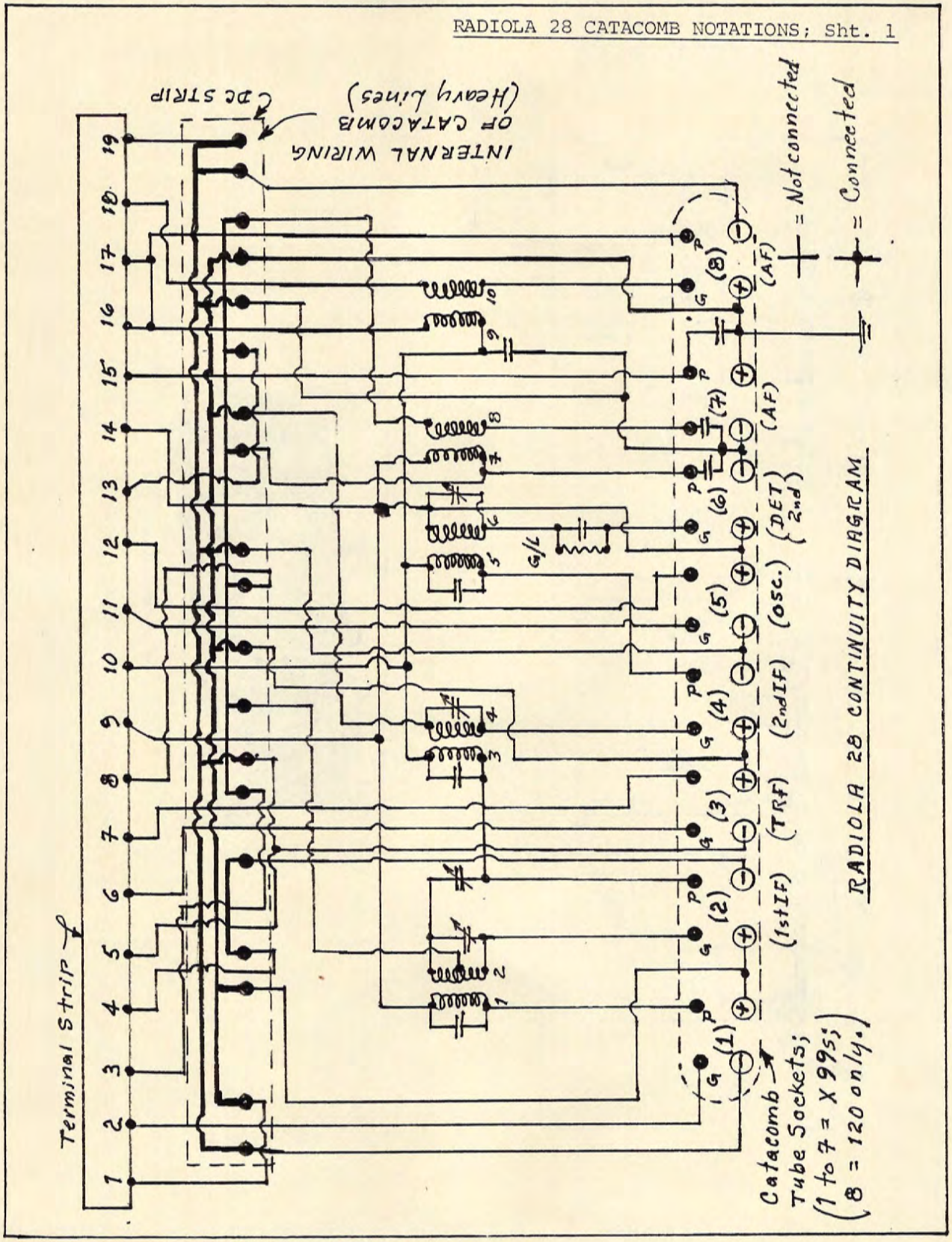
# RADIOLA 28



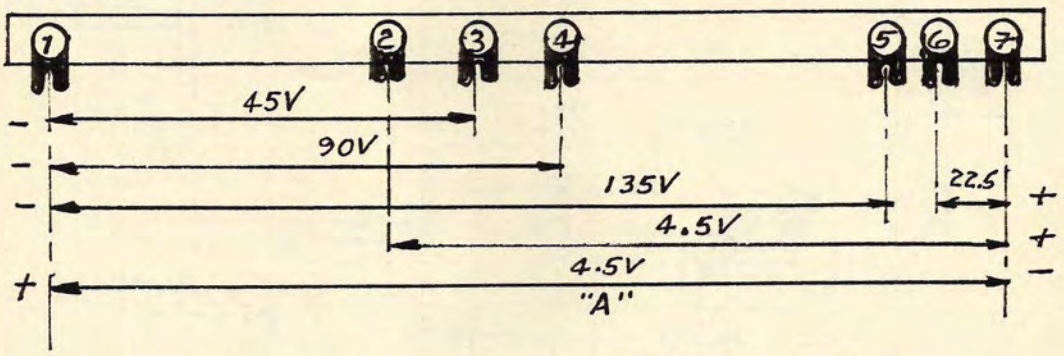
*Continuity Diagram of Radiola No. 28 Catacomb, D.C. Operated.*



*An unpotted catacomb.*


RADIOLA 28 CATACOMB NOTATIONS; Sht. 1
INTERNAL WIRING OF CATACOMB (Heavy Lines)
Terminal Strip
Catacomb Tube Sockets; (1 to 7 = X99S; 8 = 120 only.)
= Not connected
= Connected
(1st IF) (TRF) (2nd IF) (osc.) (DET 2nd) (AF)
RADIOLA 28 CONTINUITY DIAGRAM

RADIOLA 28 CATACOMB NOTES; Sht. 2




CORRECT VOLTAGE READINGS @ BATTERY STRIP

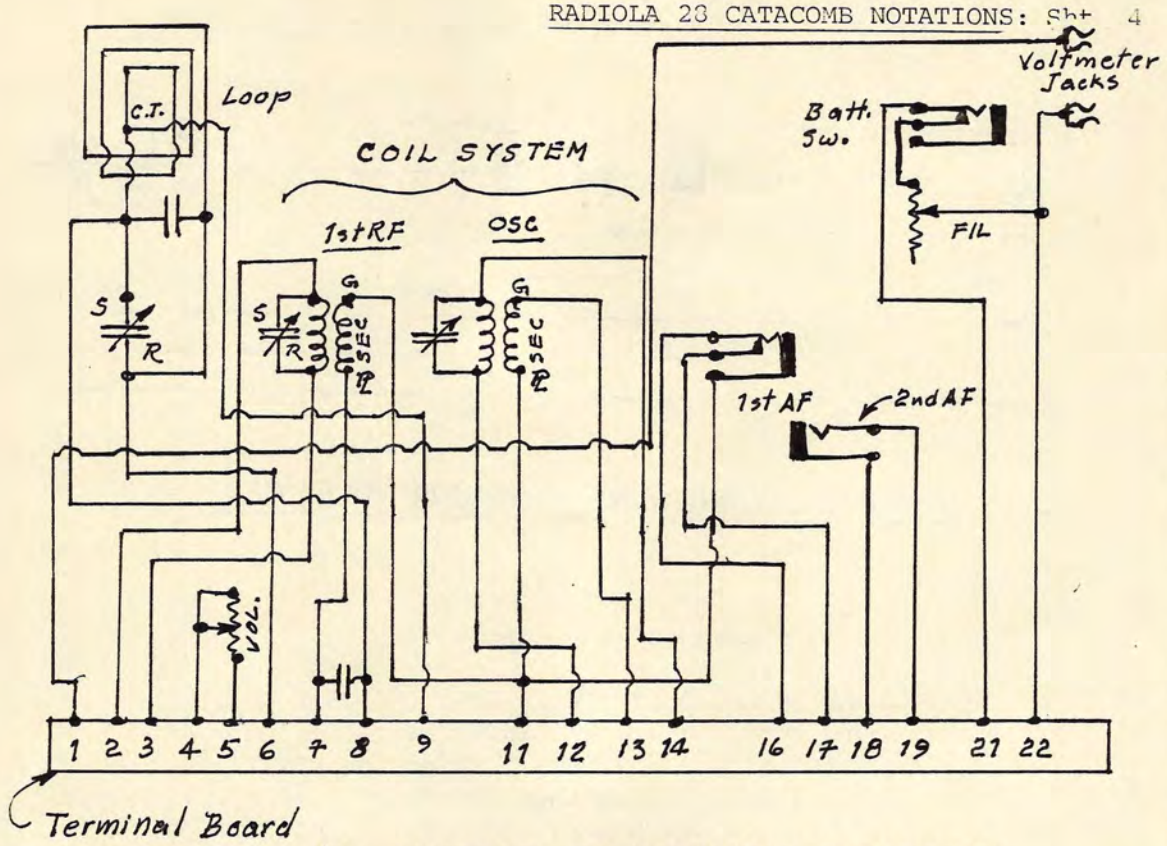
NOTES:

1. Some models had adjustable loop neutralising condensers.
2. The AC model of the 28 used the same catacomb, and were essentially interchangeable. The AC version had a by-pass between the DET tube pins "P" and "A+", but the battery version had the same by-pass between pins "P" and "A+" of tube no. 7.
3. RCA's original part number for the catacombs was 8247, with the 8-tube version specified with "Red Lead - 8 Tube".
4. For RCA factory changes to the AC 28, refer to the following page.
5. Victor models 9-2, 9-25, 9-40, 9-55, and 15-1 used the same catacomb, but catacomb terminal connexions to the chassis terminal strip were not the same.
6. Electrola models 9-25 and 9-55 differed slightly from the other catacombs in that a trimmer was sometimes incorporated on the Secondary side of the coils. However, the usual catacomb can be used.

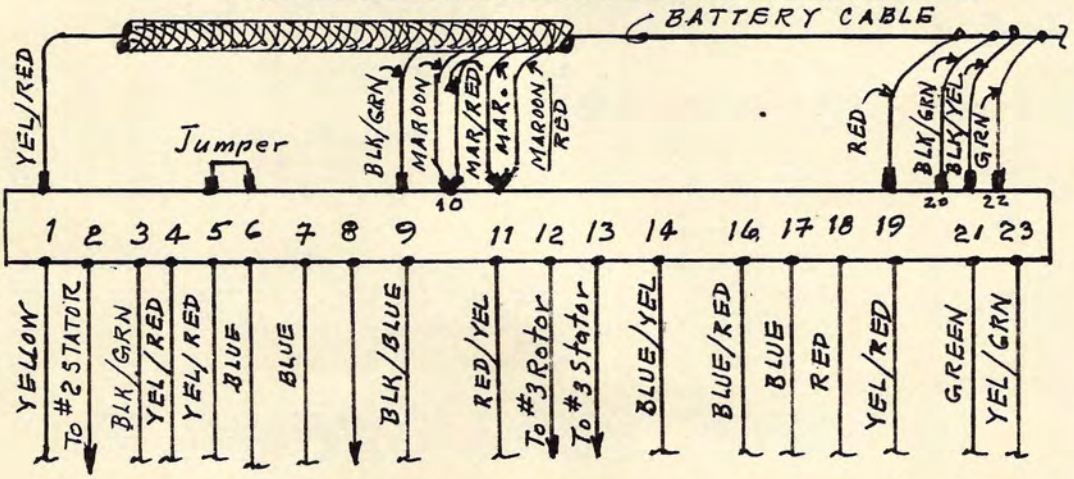
VOLTAGE READINGS TAKEN AT CATACOMB TERMINAL STRIP:
(Reading from left to right when facing the set.)

| Terminals: | Correct Effect: |
|---|---|
| 1 - 21 | 31 volts, with battery setting near "0". Positive terminal of voltmeter on No.1. |
| 1 - 10 | 21.5 Volts. (+) voltmeter terminal to No. 10. |
| 10 - 11 | 41 volts. (+) voltmeter terminal to No. 11. |

RADIOLA 28 CATACOMB NOTATIONS: Sht 4




28 CHASSIS CONTINUITY DIAGRAM




TERMINAL BOARD CABLE CONNEXIONS

NOTE: Two or more leads of the same colour may be distinguished by the number following the colour designation @ each end of a given lead.

RADIOLA 28 CATACOMB NOTATIONS; Sht. 3

The Octupus was noted for making subtle changes in the circuitry of their sets, without ever telling the service fraternity about them. This enhanced the sales of RCA's Service Manuals, but could frequently play hob with servicemen trying to fix a 28 without them. The following notes are changes made by the Octupus in their factory-built AC 28 sets (since the circuit was licensed to others, the distinction "factory-built" is necessary). These changes apply to the straight AC sets as distingusihed from battery operated 28s converted to AC operation.

1. Whisker No. 16 is connected to terminal 19 instead of terminal 17.

2. The condenser cable had an additional connexion.

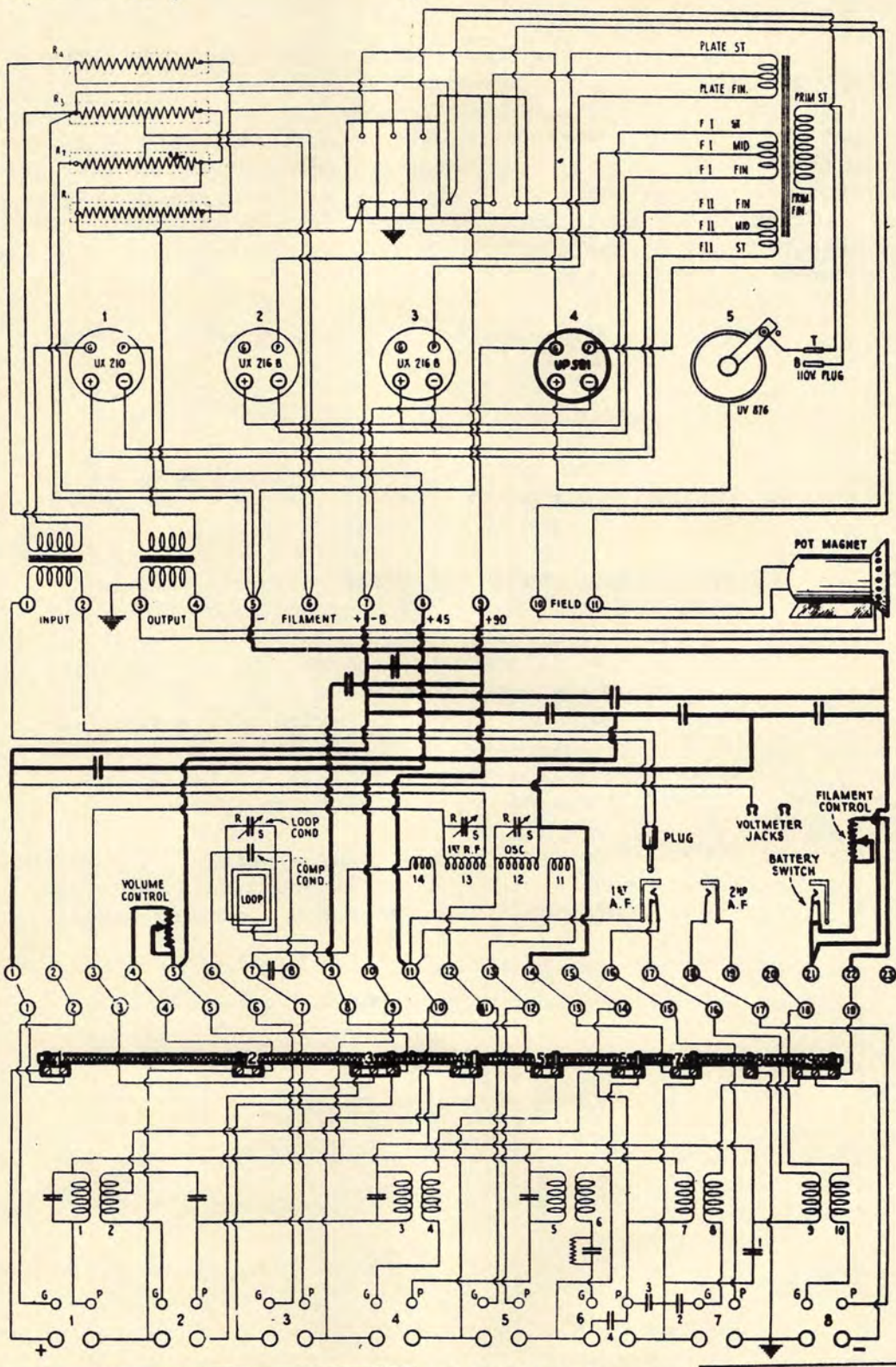
3. Output of the circuit was taken direct from the terminal strip at the rear of the catacomb, and the plug id not used in the First Stage Jack.

4. The filament switch voltmeter pin-jacks and the second AF stage phone-jack were omitted.

5. Two types of filament resistance strips were used, mounted on the catacomb for the AC models. On late model production, thesecond sexion of the strip was left open. This was compensated for by lowering the resistance of the volume control, shunted across the second sexion of the resistance strip.

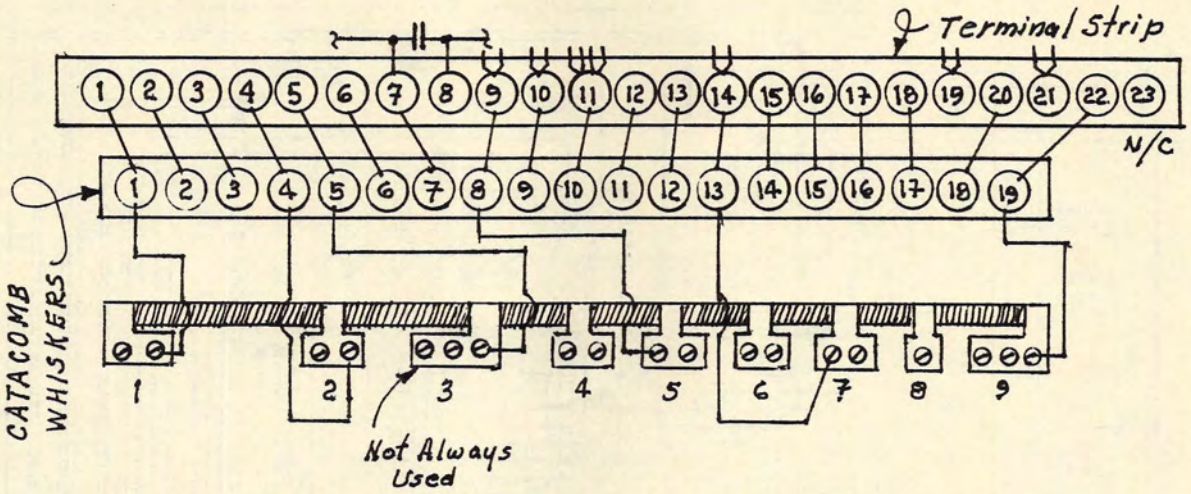
6. The AC 28 used the UP-972 power amplifier; the Victor console models using the 28 catacomb used the AP-947 series power amplifiers; they are not interchangeable.

# RADIOLA 28, VICTOR 9-2, 9-25, 9-40, 9-55 & 15-1



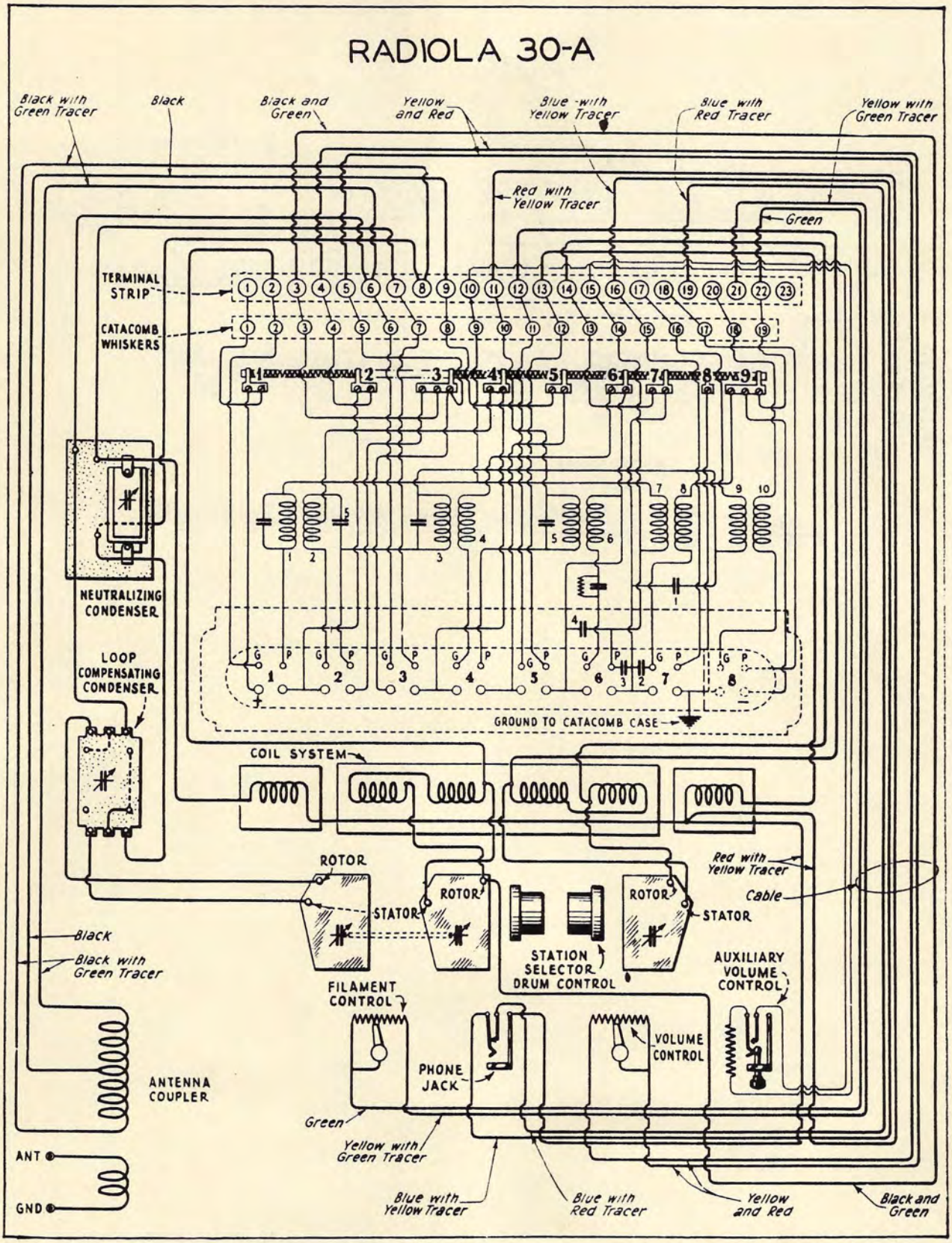

A.C. PACKAGE CHANGES

# RADIOLA 30

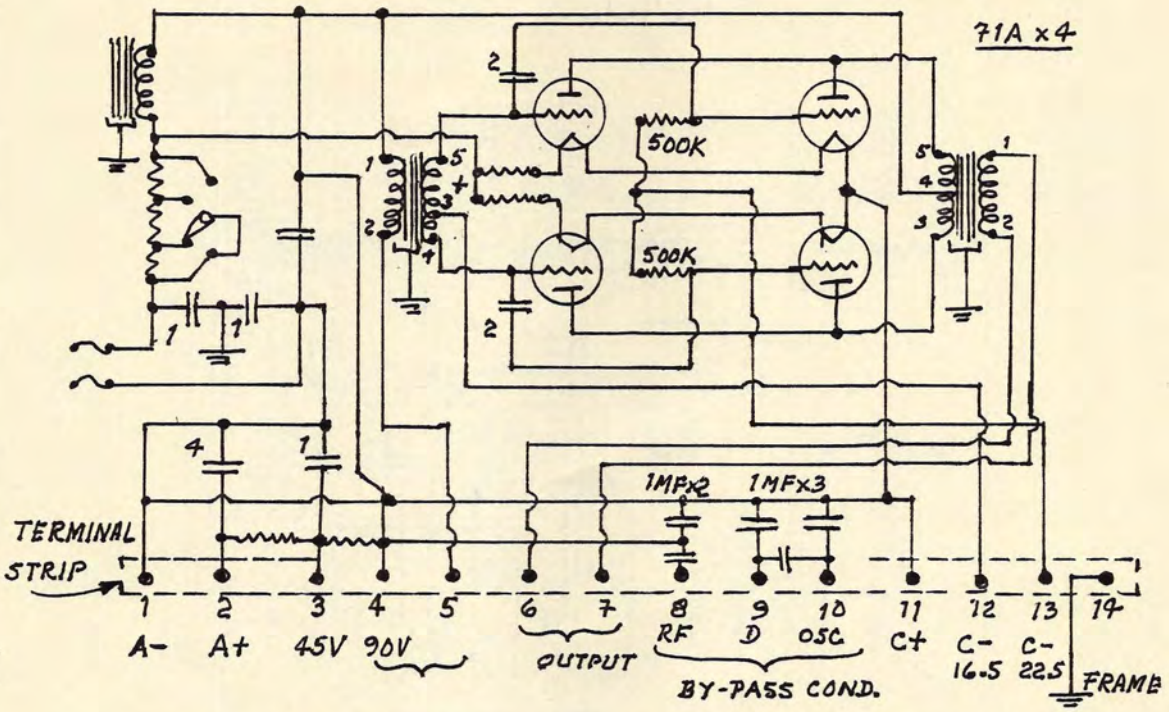



For Leads Not Shown See Other Model 30 Sketches.

# RADIOLA 30-A


Black with Green Tracer
Black
Black and Green
Yellow and Red
Blue with Yellow Tracer
Blue with Red Tracer
Yellow with Green Tracer
Red with Yellow Tracer
Green
TERMINAL STRIP
CATACOMB WHISKERS
NEUTRALIZING CONDENSER
LOOP COMPENSATING CONDENSER
GROUND TO CATACOMB CASE
COIL SYSTEM
ROTOR
STATOR
ROTOR
ROTOR
STATOR
Red with Yellow Tracer
Cable
Black
Black with Green Tracer
STATION SELECTOR DRUM CONTROL
AUXILIARY VOLUME CONTROL
FILAMENT CONTROL
VOLUME CONTROL
PHONE JACK
ANTENNA COUPLER
ANT
GND
Green
Yellow with Green Tracer
Blue with Yellow Tracer
Blue with Red Tracer
Yellow and Red
Black and Green

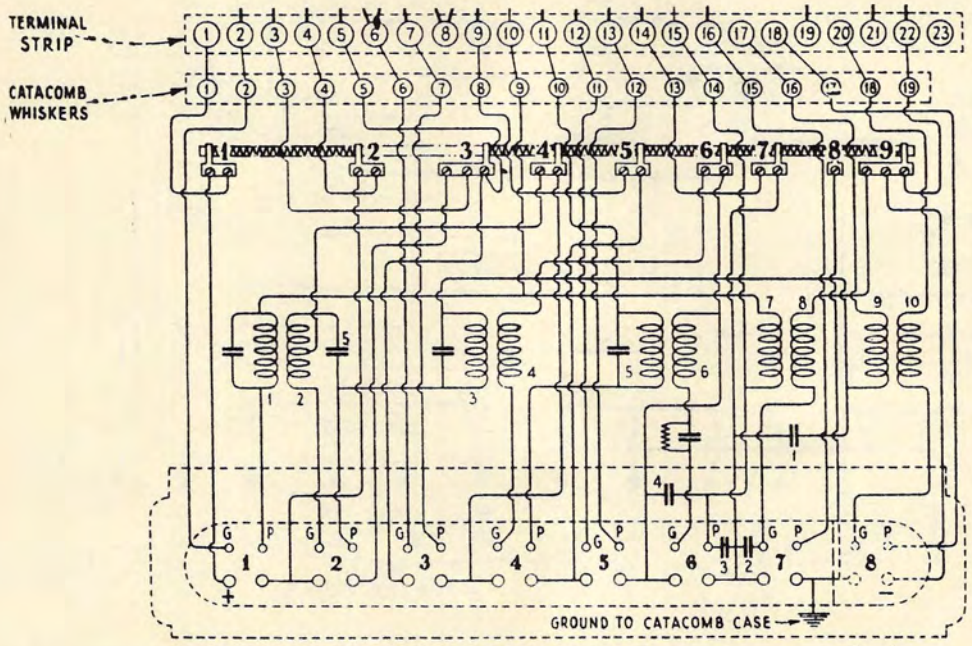
# RADIOLA 30-A

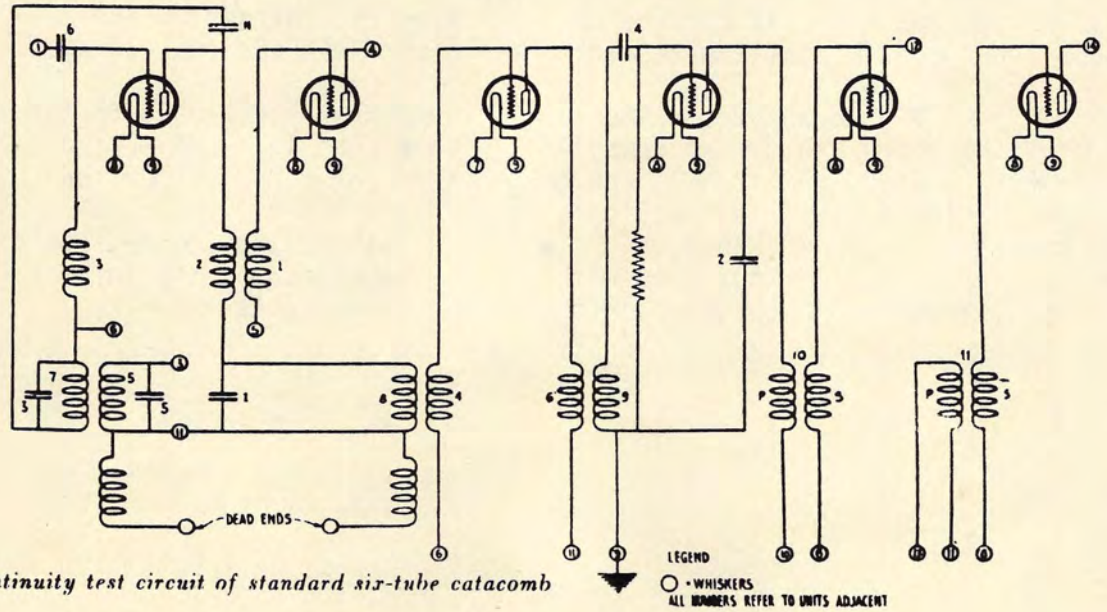



While it is rare to encounter strictly DC mains, even on farms, you may have or come by a Radiola 30A, which was operated from DC mains of the time. It is identical to the AC Model, with the exception of the AF stage, which consisted of four 71As. The output transformer was designed for the RCA 100A speaker. The sketch above shows the connexions at the terminal strip, with the various voltages.

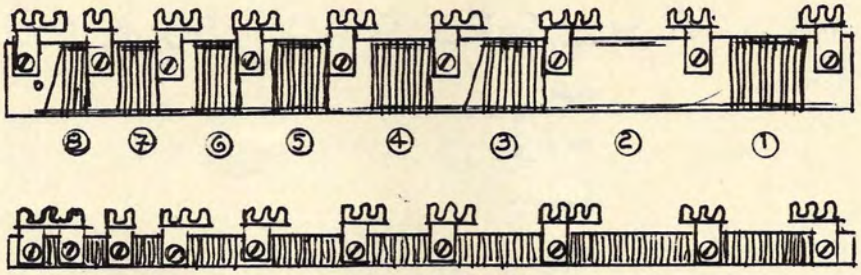
A note about the Radiola 30A condenser block used in the power pack: There are two condenser banks, one containing 10 MFD and the other, 12 MFD. The 12 MFD bank consists of one 6 MFD filter condenser and two 2 MFD grid-blocking condensers, and teo 1 MFD grounding condensers. The 10 MFD bank contains the extra filter condensers normally in the AC package used with the 8-tube catacomb. The internal connexions should be shown on the sides of the units.

# RADIOLA 32




*Continuity test circuit of standard six-tube catacomb*

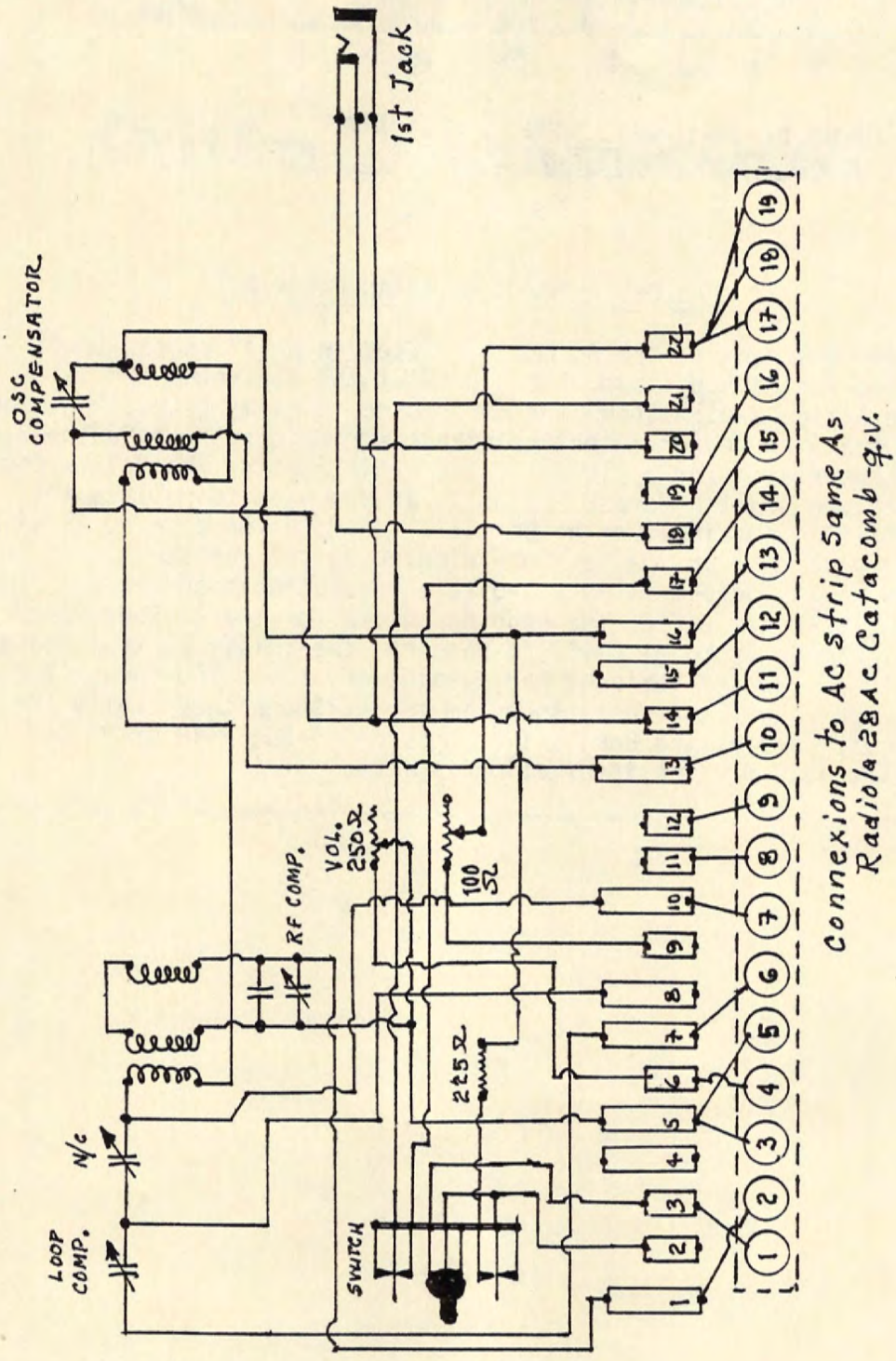



AC STRIP

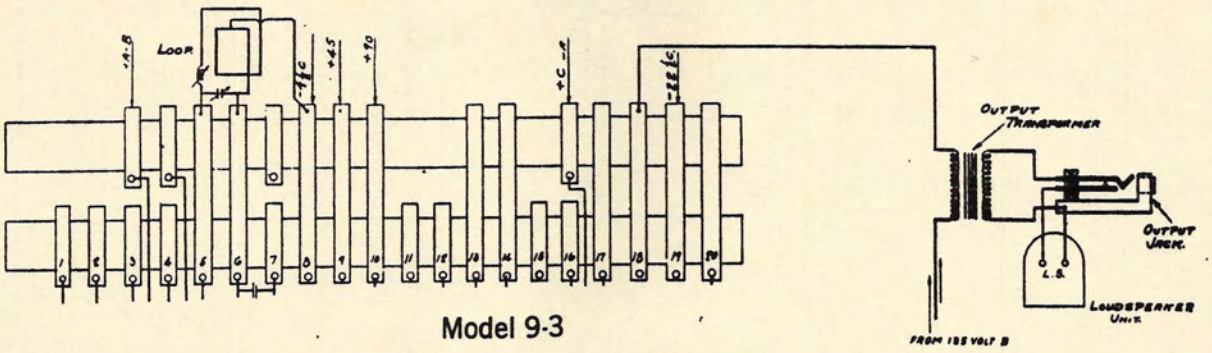
FACTORY ALTERED RESISTANCE-STRIPS

If you have any of the AC models listed in prior pages, check the CATACOMB resistance strip. The sketch at the top shows the later strip; the bottom sketch shows the strip used in early production. You will note that the new or later resistance strip is open at Sexion 2. This was compensated for by lowering the resistance of the Volume Control, which was shunted across Sexion 2. If you have to replace the Volume Control, especially onthe Borgia II or Hyperion models, it will be necessary to cut out the Sexion 2 winding on the resistor strip in order to provide correct filament voltage regulationat socket No. 2. This change will not affect the readings given for the various tests of the catacombs. In Model 9-40, in passing, the volume control had a value of 20K-ohms, and Sexion 2 had a value of around 250-ohms. If you want the upper and lower resistance limits (although they really are not that critical) of the Borgia II, Hyperion, 9-25, 9-40 or 9-55, write to the author - the information is free.

# VICTOR 9-2, 9-25, 9-40, 9-55 & 15-1



# VICTOR 9-3 & 9-15




Model 9-3

## NOTES

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